What is claimed is:

1. An antenna system comprising:

(a) a Luneberg Lens having a spherically shaped outer surface and a spherically shaped focal surface spaced from its outer surface;

(b) a plurality of patch antenna elements disposed along the focal surface of the Lungberg Lens; and

(c) a power combiner for combining signals received by said plurality of patch antenna elements.

2. The antenna system of claim 1 wherein each patch antenna element of said plurality of patch antenna elements has at least one feed point for receiving signals, the signals at said feed points being selectively routed to said power combiner based upon certain predetermined signal criteria.

3. The antenna system of claim 1 wherein each patch antenna element of said plurality of patch antenna elements has at least two feed points for receiving circularly polarized signals, the signals received at said feed points being selectively routed to said power combiner based upon certain predetermined signal criteria.

4. The antenna system of claim 3 wherein the signals routed from the feed points of each patch antenna element are routed via a first switch and one of a plurality of filters having different band pass characteristics.

5. The antenna system of claim 4 wherein the signals routed from the feed points of each patch antenna element are routed via a second switch, the second switch routing the signals to either a matched load or said power combiner.

6. The antenna system of claim 5 wherein the second switch is controlled in based upon said certain predetermined signal criteria.

7. The antenna system of claim 6 wherein the predetermined signal criteria is a signal level of the signal entering the entering the second switch and wherein the second switch is switched to couple the signals entering the second switch to said matched load when the signal level exceeds a predetermined level.

8. The antenna system of claim 7 wherein the signals from the at least two feed points associated with a single patch antenna element are routed via a coupler before being passed to said second switch.

9. The antenna system of claim 3 wherein the signals routed from the feed points are routed via a switch for routing the signals to either a matched load or said power combiner.

10. The antenna system of claim 9 wherein the second switch is controlled in based upon said certain predetermined signal criteria.

11. The antenna system of claim 10 wherein the predetermined signal criteria is a signal level of the signal entering the entering the second switch and wherein the second switch is switched to couple the signals entering the second switch to said matched load when the signal level exceeds a predetermined level.

12. A robust GPS system comprising;

(a) a plurality of GPS satellites each transmitting a GPS signal;

(b) a plurality of airborne GPS platforms, each GPS platform including a GPS receiver for receiving GPS signals from a number of visible GPS satellites, each airborne platform also

including a GPS transmitter for transmitting its own GPS signal, the GPS signals being transmitted from the plurality of airborne GPS platforms being differentiated from the GPS signals transmitted by the visible GPS satellites;

(c) at least one terrestrially located GPS receiver for receiving the GPS signals transmitted by visible ones of the GPS satellites and by visible ones of said airborne GPS platforms.

13. The robust GPS system of claim 12 wherein the terrestrially located GPS receiver includes an antenna system comprising:

(a) a Luneberg Lens having a spherically shaped outer surface and a spherically shaped focal surface spaced from its outer surface;

(b) a plurality of patch antenna elements disposed along the focal surface of the Lungberg Lens; and

(c) a power combiner for combining signals received by said plurality of patch antenna elements.

14. The robust GPS system of claim 13 wherein each patch antenna element of said plurality of patch antenna elements has at least one feed point for receiving signals, the signals at said feed points being selectively routed to said power combiner based upon certain predetermined signal criteria.

15. The robust GPS system of claim 13 wherein each patch antenna element of said plurality of patch antenna elements has at least two feed points for receiving circularly polarized signals, the signals received at said feed points being selectively routed to said power combiner based upon certain predetermined signal criteria.

16. The robust GPS system of claim 15 wherein the signals routed from the feed points of each patch antenna element are routed via a first switch and one of a plurality of filters having different band pass characteristics.

17. The robust GPS system of claim 16 wherein the signals routed from the feed points of each patch antenna element are routed via a second switch, the second switch routing the signals to either a matched load or said power combiner.

18. The robust GPS system of claim 17 wherein the second switch is controlled in based upon said certain predetermined signal criteria.

19. The robust GPS system of claim 18 wherein the predetermined signal criteria is a signal level of the signal entering the entering the second switch and wherein the second switch is switched to couple the signals entering the second switch to said matched load when the signal level exceeds a predetermined level.

20. The robust GPS system of claim 19 wherein the signals from the at least two feed points associated with a single patch antenna element are routed via a coupler before being passed to said second switch.

21. The robust GPS system of claim 15 wherein the signals routed from the feed points are routed via a switch for routing the signals to either a matched load or said power combiner.

22. The robust GPS system of claim 21 wherein the second switch is controlled in based upon said certain predetermined signal criteria.

23. The robust GPS system of claim 22 wherein the predetermined signal criteria is a signal level of the signal entering the entering the second switch and wherein the second switch is switched to couple the signals entering the second switch to said matched load when the signal level exceeds a predetermined level.

24. The robust GPS system of claim 12 wherein the airborne GPS receiver includes an antenna system comprising:

(a) a Luneberg Lens having a spherically shaped outer surface and a spherically shaped focal surface spaced from its outer surface;

(b) a plurality of patch antenna elements disposed along the focal surface of the Lungberg Lens; and

(c) a power combiner for combining signals received by said plurality of patch antenna elements.

25. A method for reducing potential interference to a GPS receiver responsive to GPS signals transmitted from a constellation of GPS satellites, the method comprising:

deploying air vehicles each serving as a platform for a secondary GPS position and timing reference transmitter, each platform including a receiver for receiving GPS signals from the GPS satellite constellation;

transmitting the secondary GPS position and timing reference information from the transmitters on the air vehicles, the secondary GPS position and timing reference information being based upon the GPS signals received from the GPS satellite constellation at each platform; and

receiving the secondary GPS position and timing reference information from the transmitters on one or more of the air vehicles at said GPS receiver.

26. The method of claim 25 wherein the GPS receiver is terrestrially located.

27. The method of claim 26 wherein the information is transmitted from the air vehicles to the terrestrial GPS receiver in a spread-spectrum manner similar to the manner used for direct satellite to terrestrial GPS receive reception.

28. The method of claim 26 wherein the information is transmitted from the air vehicles to the

terrestrial GPS receiver by modulation onto a carrier at a specified frequency.

29. The method of claim 25 wherein the air vehicles are unmanned.